

REMARKS

Favorable reconsideration and allowance of the subject application are respectfully requested in view of the following remarks.

Summary of the Office Action

Claim 5 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Claims 1-3, 5, 8-10 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,386,627 to Booth et al. (hereinafter "Booth") in view of U.S. Patent No. 6,438,281 to Tsukamoto et al. (hereinafter "Tsukamoto").

Claims 4, 7, 11 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Booth in view of Tsukamoto and U.S. Patent No. 5,502,893 to Endoh et al. (hereinafter "Endoh").

Claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Booth in view of Tsukamoto and U.S. Patent Application Publication No. 2003/0128907 to Kikuchi et al. (hereinafter "Kikuchi").

Summary of the Response to the Office Action

Applicants amend claims 1, 5, 8 and 12, and add new claims 14-15 by this amendment. Accordingly, claims 1-15 are currently pending.

Claim Rejection Under 35 U.S.C. §112, Second Paragraph

Claim 5 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants have amended claim 5 to address the Examiner's concerns. Thus, Applicants respectfully submit that claim 5, as amended, fully complies with the requirements of 35 U.S.C. § 112, second paragraph. Accordingly, the Examiner's consideration and withdrawal of the rejection of claim 5 under 35 U.S.C. §112, second paragraph, are respectfully requested.

Claim Rejections Under 35 U.S.C. §103(a)

Claims 1-3, 5, 8-10 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Booth in view of Tsukamoto. This rejection is respectfully traversed for at least the following reasons.

Claims 1-3

Applicants respectfully submit that Booth and Tsukamoto, whether taken separately or in combination, fail to teach or suggest each and every feature of claims 1-3. For instance, it is respectfully submitted that neither Booth nor Tsukamoto teaches or suggests the claimed combination as set forth in independent claim 1 including at least “removing the insulating resin adhesive from the predetermined via holes to form opto-via holes.”

The Office Action asserts that the element (140) as taught by Booth corresponds to the insulating resin adhesive, as set forth in Applicants’ claimed combination. However, Booth discloses the element (140), as polymer metal conductive (PMC) paste, that contains gold or silver. See, for example, column 3, lines 51-54 of Booth. Thus, Applicants respectfully submit that Booth’s element (140) is not an insulating resin adhesive.

In addition, Applicants respectfully submit that no suggestion or motivation exists in Booth or Tsukamoto to render the feature of “removing the insulating resin adhesive from the predetermined via holes to form opto-via holes,” as set forth in claim 1, obvious. In fact, the Office Action acknowledges at page 3, lines 13-14 that “Booth does not teach expressly removing the insulating resin adhesive (140) from the via holes.” Thus, the Office Action then goes on asserting at page 3, lines 14-15 that “since the insulating resin adhesive (140) [of Booth] does not fill the entire via (120) it does not need to be removed to create the via.” Hence, Booth not only fails to teach removing an insulating resin adhesive from via holes, but Booth instead

teaches away from removing an insulating resin adhesive from via holes, especially since the adhesive (140) of Booth “does not need to be removed,” as asserted by the Office Action.

Further, it is respectfully submitted that no portion of Tsukamoto’s disclosure teaches or suggests removing an insulating resin adhesive from via holes to form opto-via holes.

M.P.E.P. §2143.03 instructs that “[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).” Since, in view of the above, Booth and Tsukamoto, whether taken separately or in combination, fail to teach or suggest each and every element set forth in independent claim 1, it is respectfully submitted that Booth in view of Tsukamoto do not render claim 1 unpatentable. Further, since claims 2-3 depend from claim 1, it is respectfully submitted that Booth in view of Tsukamoto also do not render claims 2-3 unpatentable. Accordingly, withdrawal of the rejection of claims 1-3 under 35 U.S.C. §103(a) is respectfully requested.

Claim 5

Applicants respectfully submit that Booth and Tsukamoto, whether taken separately or in combination, fail to teach or suggest each and every feature of claim 5. For instance, it is respectfully submitted that neither Booth nor Tsukamoto teaches or suggests the claimed combination as set forth in independent claim 5, as newly-amended, including at least “layering copper layers on the first patterned copper clad laminate using an adhesive,” “drilling a plurality of electric- and first opto-via holes in the first layered copper clad laminate,” and “drilling a plurality of second opto-via holes in the first layered copper clad laminate after the second circuit pattern is formed on the upper and lower sides of the first layered copper clad laminate.”

The Office Action appears to assert that the vias (120) and the interposer layer (150) as taught by Booth correspond to the via holes and the patterned copper clad laminate, as set forth in Applicants' claimed combination. However, Booth discloses after the vias (120) are formed and after the polymer metal conductive (PMC) paste (140) is screened at the via openings (120), the interposer layer (150) is then stacked to another interposer layer (150). See, for example, column 3, line 67 – column 4, line 4 of Booth. Thus, Applicants respectfully submit that Booth's vias (120) are formed in the interposer layer (150) before the interposer layer (150) is stacked to another layer. In fact, no portion of Booth's or Tsukamoto's disclosure teaches or suggests drilling a plurality of via holes in a copper clad laminate after the copper clad laminate is layered with copper layers.

Since, in view of the above, Booth and Tsukamoto, whether taken separately or in combination, fail to teach or suggest each and every element set forth in independent claim 5, as newly-amended, it is respectfully submitted that Booth in view of Tsukamoto do not render claim 5 unpatentable. Accordingly, withdrawal of the rejection of claim 5 under 35 U.S.C. §103(a) is respectfully requested.

Claims 8-10

Applicants respectfully submit that Booth and Tsukamoto, whether taken separately or in combination, fail to teach or suggest each and every feature of claims 8-10. For instance, it is respectfully submitted that neither Booth nor Tsukamoto teaches or suggests the claimed combination as set forth in independent claim 8 including at least “an insulating resin adhesive used to layer the patterned copper clad laminates on each other,” and “a plurality of opto-via holes formed by removing the insulating resin adhesive from the via holes.”

The Office Action asserts that the element (140) as taught by Booth corresponds to the insulating resin adhesive, as set forth in Applicants' claimed combination. However, Booth discloses the element (140), as polymer metal conductive (PMC) paste, that contains gold or silver. See, for example, column 3, lines 51-54 of Booth. Thus, Applicants respectfully submit that Booth's element (140) is not an insulating resin adhesive.

In addition, Applicants respectfully submit that no suggestion or motivation exists in Booth or Tsukamoto to render the feature of "a plurality of opto-via holes formed by removing the insulating resin adhesive from the via holes," as set forth in claim 8, obvious. In fact, the Office Action acknowledges at page 3, lines 13-14 that "Booth does not teach expressly removing the insulating resin adhesive (140) from the via holes." Thus, the Office Action then goes on asserting at page 3, lines 14-15 that "since the insulating resin adhesive (140) [of Booth] does not fill the entire via (120) it does not need to be removed to create the via." Hence, Booth not only fails to teach removing an insulating resin adhesive from via holes, but Booth instead teaches away from removing an insulating resin adhesive from via holes, especially since the adhesive (140) of Booth "does not need to be removed," as asserted by the Office Action.

Further, it is respectfully submitted that no portion of Tsukamoto's disclosure teaches or suggests opto-via holes formed by removing an insulating resin adhesive from via holes.

Since, in view of the above, Booth and Tsukamoto, whether taken separately or in combination, fail to teach or suggest each and every element set forth in independent claim 8, it is respectfully submitted that Booth in view of Tsukamoto do not render claim 8 unpatentable. Further, since claims 9-10 depend from claim 8, it is respectfully submitted that Booth in view of Tsukamoto also do not render claims 9-10 unpatentable. Accordingly, withdrawal of the rejection of claims 8-10 under 35 U.S.C. §103(a) is respectfully requested.

Claim 12

Applicants respectfully submit that Booth and Tsukamoto, whether taken separately or in combination, fail to teach or suggest each and every feature of claim 12. For instance, it is respectfully submitted that neither Booth nor Tsukamoto teaches or suggests the claimed combination as set forth in independent claim 12, as newly-amended, including at least “an adhesive used to layer copper layers on the first copper clad laminate,” “a plurality of electric-via holes formed by drilling the first layered copper clad laminate,” “a plurality of first opto-via holes formed at the same time as the drilling of the electric-via holes,” and “a plurality of second opto-via holes formed by drilling desired points on the first layered copper clad laminate after the first circuit pattern layer is formed.”

The Office Action appears to assert that the vias (120) and the interposer layer (150) as taught by Booth correspond to the via holes and the patterned copper clad laminate, as set forth in Applicants’ claimed combination. However, Booth discloses after the vias (120) are formed and after the polymer metal conductive (PMC) paste (140) is screened at the via openings (120), the interposer layer (150) is then stacked to another interposer layer (150). See, for example, column 3, line 67 – column 4, line 4 of Booth. Thus, Applicants respectfully submit that Booth’s vias (120) are formed in the interposer layer (150) before the interposer layer (150) is stacked to another layer. In fact, no portion of Booth’s or Tsukamoto’s disclosure teaches or suggests drilling a plurality of via holes in a copper clad laminate after the copper clad laminate is layered with copper layers.

Since, in view of the above, Booth and Tsukamoto, whether taken separately or in combination, fail to teach or suggest each and every element set forth in independent claim 12, as newly-amended, it is respectfully submitted that Booth in view of Tsukamoto do not render

claim 12 unpatentable. Accordingly, withdrawal of the rejection of claim 12 under 35 U.S.C. §103(a) is respectfully requested.

Claims 4, 7, 11 and 13

Claims 4, 7, 11 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Booth in view of Tsukamoto and Endoh. This rejection is respectfully traversed for at least the following reasons.

Applicants respectfully submit that Endoh fails to cure the above-mentioned deficiencies of Booth and Tsukamoto. Since Booth, Tsukamoto and Endoh, whether taken separately or in combination, fail to teach or suggest each and every element set forth in independent claims 1, 5, 8 and 12, and since claims 4, 7, 11 and 13 respectively depend from claims 1, 5, 8 and 12, it is respectfully submitted that Booth in view of Tsukamoto and Endoh do not render claims 4, 7, 11 and 13 unpatentable.

In addition, Applicants respectfully submit that claims 4, 7, 11 and 13 are also allowable because of the features recited therein. For instance, it is respectfully submitted that none of Booth, Tsukamoto and Endoh teaches or suggests an epoxy resin with 95% or more light transmissivity filling the opto-via holes, as set forth in claims 4, 7, 11 and 13.

The Office Action asserts at page 5, lines 5-7 that the prepreg layer (5) as taught by Endoh corresponds to the epoxy resin, because Endoh's prepreg layer (5) is the same as the preferred resin disclosed at page 11, lines 17-18 of the present application. However, the discussion at page 11, lines 17-18 of the present application is not related to an epoxy resin with 95% or more light transmissivity. Further, no portion of Endoh's disclosure discusses the prepreg layer (5) as having 95% or more light transmissivity.

Accordingly, withdrawal of the rejection of claims 4, 7, 11 and 13 under 35 U.S.C. §103(a) is respectfully requested.

Claim 6

Claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Booth in view of Tsukamoto and Kikuchi. This rejection is respectfully traversed for at least the following reasons.

Applicants respectfully submit that Kikuchi fails to cure the deficiencies of Booth and Tsukamoto. Since Booth, Tsukamoto and Kikuchi, whether taken separately or in combination, fail to teach or suggest each and every element set forth in independent claim 5, as newly-amended, and since claim 6 depends from claim 5, it is respectfully submitted that Booth in view of Tsukamoto and Kikuchi do not render claim 6 unpatentable. Accordingly, withdrawal of the rejection of claim 6 under 35 U.S.C. §103(a) is respectfully requested.

New Claims 14-15

Applicants have added new claims 14-15 to further define the invention. Applicants respectfully submit that claims 14-15 are allowable at least because of their respective dependence from claims 5 and 12, and because of the features recited therein.

Conclusion

In view of the foregoing, withdrawal of the rejections and allowance of the pending claims are earnestly solicited. Should there remain any questions or comments regarding this response or the application in general, the Examiner is urged to contact the undersigned at the number listed below.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under

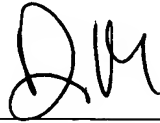
37 C.F.R. § 1.136 not accounted for above, such extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLP

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